



May 6, 2013

ULNRC-05990

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

10 CFR 50.55a

Ladies and Gentlemen:

**DOCKET NUMBER 50-483  
CALLAWAY PLANT UNIT 1  
UNION ELECTRIC CO.  
FACILITY OPERATING LICENSE NPF-30  
SUPPLEMENTAL INFORMATION FOR  
10 CFR 50.55a REQUEST: PROPOSED ALTERNATIVE  
TO ASME SECTION XI REQUIREMENTS FOR  
LEAKAGE TESTING OF REACTOR PRESSURE VESSEL HEAD  
FLANGE LEAKOFF LINES (RELIEF REQUEST I3R-14)**

Reference 1: Ameren Missouri Letter ULNRC-05986, "10 CFR 50.55a Request: Proposed Alternative to ASME Section XI Requirements for Leakage Testing of Reactor Pressure Vessel Head Flange Leakoff Lines (Relief Request I3R-14)," dated May 2, 2013

Pursuant to 10 CFR 50.55a(a)(3)(ii), and by letter dated May 2, 2013 (Reference 1), Ameren Missouri submitted Relief Request I3R-14 in regard to the pressure at which leakage testing of the reactor pressure vessel head flange leakoff lines must be performed, as specified per Paragraph IWC-5221 of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI. The relief is requested on the basis that compliance with the Code-specified pressure requirement to test the leakoff lines at system operating pressure is impractical and would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

In the Relief Request submitted per the May 2, 2013 letter, Ameren Missouri provided justification for the requested relief, as well as a proposed alternative approach to the required leakage testing. Drawings were also provided as an attachment to the letter. Ameren Missouri has determined, however, that additional information should be provided to facilitate the NRC's review of the Relief Request. The additional information is hereby provided as Attachment 1 to this letter. In addition, the isometric drawing provided as one of the two drawings attached to the May 2, 2013 letter has been

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revised to reflect an additional two to three feet of inaccessible piping. The revised drawing is provided as Attachment 2.

As noted in Ameren Missouri's May 2, 2013 letter, NRC verbal approval of Relief Request I3R-14 is being sought during the current refueling outage at Callaway. This supplemental letter is intended to support prompt verbal approval upon receipt of the letter by the NRC.

No new regulatory commitments have been made or identified in this letter or its attachments. For any questions you may have regarding this request, please contact me at 573-544-8272 or Tom Elwood at 314-225-1905.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark McLachlan". The signature is fluid and cursive, with the first name "Mark" and last name "McLachlan" clearly distinguishable.

Mark A. McLachlan  
Director Engineering Services

TBE/JAD/nls

Attachment 1: Supplemental Information Regarding 10 CFR 50.55a Request I3R-14

Attachment 2: Isometric Drawing (Revised)

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cc: Mr. Arthur T. Howell  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region IV  
612 E. Lamar Blvd., Suite 400  
Arlington, TX 76011-4125

Senior Resident Inspector  
Callaway Resident Office  
U.S. Nuclear Regulatory Commission  
8201 NRC Road  
Steedman, MO 65077

Mr. Fred Lyon  
Project Manager, Callaway Plant  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-8G14  
Washington, DC 20555-2738

Mr. James T. Polickoski  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-8B1A  
Washington, DC 20555-2738

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STARS Regulatory Affairs

Mr. John O'Neill (Pillsbury Winthrop Shaw Pittman LLP)

Missouri Public Service Commission

**Supplemental Information Regarding 10 CFR 50.55a Request I3R-14**

The following supplemental information is provided in support of 10 CFR 50.55a Request I3R-14 concerning leakage testing of the reactor pressure vessel head flange leakoff lines as required per Paragraph IWC-5221 of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI.

Reference 1: Ameren Missouri Letter ULNRC-05986, "10 CFR 50.55a Request: Proposed Alternative to ASME Section XI Requirements for Leakage Testing of Reactor Pressure Vessel Head Flange Leakoff Lines (Relief Request I3R-14)," dated May 2, 2013

\* \* \* \* \*

**Clarification of ASME Section XI Code Requirements:**

Callaway is currently in its third Inservice Inspection Interval, which began December 19, 2004. At the time of this submittal, Refuel 19 is in progress, which is the first refuel of the third inspection period of the interval. The applicable Code is the American Society of Mechanical Engineers (ASME) Section XI, 1998 Edition with 2000 Addenda. Relief is being requested from certain requirements of the pressure test directed by Table IWC-2500-1, Code Category C-H, Item Number C7.10. Specifically, request is being sought from the requirements in IWC-5221, "Pressure."

**Design Parameters of the Subject Piping and Components:**

The system affected by this request consists of the ASME III Class 2 reactor pressure vessel (RPV) flange leak-off lines BB-075-BCB, BB-076-BCB, BB-077-BCB, and their associated valves. This system has design pressure and temperature ratings, and service pressure and temperature conditions (should the inner RPV O-ring fail), of 650°F and 2485 psig, and 618°F and 2235 psig, respectively. These are the same design and service conditions as the ASME III Class 1 loop piping.

**Accessibility of the Subject piping for direct visual examination:**

The total length of pipe from the inner monitor tube, line BB-076-BCB, to the point where the line tees with the outer monitor tube, line BB-075-BCB, is 71 feet. The total length of pipe from the outer monitor tube, line BB-075-BCB, to valve BBHV8032, which is the outermost limit of the system subject to the pressure test, is 79 feet. Included in the 79 feet of pipe run is tubing line BB-077-BCB and the line to drain valve BBV0081. Note that temperature element BBTE0401, used to detect leakage from the reactor vessel O-rings, is located 1 foot downstream of BBHV8032.

Lines BB-075-BCB and BB-076-BCB run parallel to each other and are each inaccessible for the first 32 feet due to being located in the annulus area between the reactor vessel and the primary shield wall. The annulus area can only be accessed by way of the refueling cavity, which is filled with water during this test, and by way of the incore tunnel underneath the reactor vessel, which during refueling operations is prohibited from being entered due to the high dose rates from the incore flux mapping thimbles being withdrawn from the reactor vessel.

Lines BB-075-BCB and BB-076-BCB exit the primary shield wall at an elevation of about 14 feet above the floor and travel horizontally along the wall for 22 feet until they drop down and exit the bioshield wall through a penetration that is about five feet off the floor. The line is uninsulated through this area and is visible, including inside the bioshield wall penetration, except for an approximately one foot section in a corner where direct sight is blocked by another line. The line outside of the bioshield, up to and including valve BBHV8032, is insulated and is about 5 feet off the floor.

#### **Service History of the Subject Piping and Components:**

Callaway's work history, as well as corrective action history was reviewed for service-related failures of the subject piping and component. The review identified no occurrences of leakage or other failures on these components. This system does have 21 socket welds, 8 of which are inaccessible behind the primary shield wall, with the rest located outside of the bioshield wall.

#### **Supplemental Information Regarding Performance of the Requested Alternate Pressure Test:**

The mandated pressure for the system per IWC-5221 is that pressure developed while the system, or portion of the system, is in service performing its normal operating function or at the system pressure developed during a test conducted to verify system operability. For the subject piping, the pressure developed while the system is performing its normal operating function, i.e., directing leakage from failed RPV flange O-rings to the reactor coolant drain tank (RCDT), would be RCS pressure (2235 psig).

During the proposed test, the pressure that this system will be subject to during the VT-2 examination will be due to the height of the water in the refueling cavity. The refueling cavity is filled to a minimum of 23 feet of water above the RPV flange for refueling activities. Therefore, the flange, located at plant elevation 2021 feet 7 inches, will see a pressure of at least 10 pounds per square inch. As the piping travels down to the RCDT, the resultant static head pressure would increase. The lowest portion of the piping is at plant elevation 2005 feet 6 inches, and would experience a pressure of approximately 17 pounds per square inch.

To ensure the lines are clear of air prior to performance of the VT-2 examination, the surveillance instructions have been revised to include a flush of lines BB-075-BCB and BB-076-BCB, after which

a four-hour hold is required. Per the surveillance, the flush of the lines is accomplished by attaching a drain hose to the flange downstream of valve BBV0081, and then flushing lines BB-075-BCB and BB-076-BCB each for the greater of either 5 minutes or until no air is seen coming from the drain hose.

The pressure test with the VT-2 examination is expected to occur on May 7, 2013. With the refueling pool having been filled on April 13, 2013, the line will have been subject to water and pressure for 24 days.



Attachment 2  
Isometric Drawing (Revised)

